



Innovation Description: MWH's Mobile Project Collaboration (MPC) System

MWH's Mobile Project Collaboration (MPC) System addresses one of the construction industry's most common challenges: supplying the right information to the right people in real-time. In other words, the industry lacks efficient project information access, storage and retrieval. Although this is a problem encountered on project teams from design through close-out, it is most evident during the phases of the project that involve work taking place in the field. Traditionally, information is stored on paper documents in a field office or is stored electronically on a computer sitting in an office. The paper documents that are actually brought out into the field become immediately outdated as the project evolves. Either way, the result is that field personnel are left without the most recent information, presenting the opportunity for quality errors, costly rework and frustration among project team members.

MWH's MPC System deploys wireless touch-screen tablets to provide field personnel with the ability to retrieve project information in real-time and also provides field personnel with the ability to transfer real-time field information to the other project team members from their location in the field. This effectively increases collaboration between field and office staff and between the various organizations involved on the project. Field personnel include superintendents, foremen, QA/QC inspectors, engineer inspectors, client representatives, etc.

The MPC System was implemented on MWH's current Tallahassee Thomas P. Smith Water Reclamation Facility upgrade project. MWH's Project Manager, Zach Herrington, explains, "Most project information systems are designed with the assumption that the end-users are sitting at a desk. The MPC System allows construction information to be produced or retrieved at the actual point of need. In addition, most systems are designed around the inward-facing concept of 'us and them.' Our system provides the flexibility to allow us to collaborate with all project team members including subcontractors, suppliers, owners and engineer inspectors, so that the entire team has access to project information from virtually anywhere."

The following are common construction documents that project field personnel can access via the MPC System on their wireless tablets from the field: Project safety procedures, design drawings/specifications, shop drawings, vendor operation and maintenance manuals, change documents (RFIs, design change notices), field work directives, daily reports, schedule updates, QA/QC documents- inspection and test plans and material testing reports, equipment delivery receipts/maintenance schedules and ActiveManuals (MWH's proprietary database-driven plant operations and maintenance manual).

In addition to accessing information, the wireless tablets allow field personnel to upload information into the MPC System from their field location, without having to come into the office. The touch screen tablets provide project team members with the ability to annotate documents di-

rectly from the tablet, allowing forms to be filled out, signed and posted to the project documents directly from the field. It also provides field personnel with the ability to create spreadsheets and word documents. The following are common construction documents that project team members can create and/or edit in the field and upload into the MPC System: pre-task plans, red-line as-built drawings, RFIs, productivity tracking spreadsheets, daily reports, project progress and schedule updates, equipment maintenance logs, QA/QC checklists, and safety inspection and audit forms.

In addition to providing project-specific information, the MPC System arms field personnel with general industry information such as OSHA's 1926 Code of Federal Regulations, American Concrete Institute information, International/State Building Codes, National Fire Protection Association (70E) information and the National Electric Code. The MPC System even provides them with the latest weather forecasts and maps to the nearest emergency facilities.

The key advantage of MWH's MPC System is that it helps reduce errors and inefficiencies in the field that stem from outdated or unavailable information. With the MPC System, critical project documents can be posted to or retrieved from the system within minutes by any team member from any location.

Reducing errors, with the potential of improving productivity, quality, and safety, certainly achieves project cost savings. But the MPC System also provides a tremendous savings in administrative costs. Traditional, paper-based systems require printing and distribution of documents, from the office to the field, and back again—adding time and costs to the project. The MWH MPC System is a sustainable solution that eliminates a significant portion of the project reproduction costs and provides a major stepping stone toward paperless projects. The Tallahassee Thomas P. Smith Wastewater Reclamation Facility Upgrade project team, where the system is currently being used, estimates that the implementation of the MPC System will provide a net savings and a positive net present value on reproduction costs alone.

The MPC System was designed with the flexibility to use readily available equipment, such as iPads, Android-based tablets and tablet PCs, to provide each project and team member organization with the ability to use the device that meets their unique needs. The MPC System is also accessible from any PC via an internet connection, providing non-field personnel access from their office. The Tallahassee project has chosen to implement the MPC System using iPads, due to their low capital and wireless service costs and ease of use.

The MPC system does not rely on economies of scale to provide value, due to its low capital and operating costs. Small to medium-sized firms up to large, global firms can realize superior value by implementing this system.

MWH Constructors, Inc. | 370 Interlocken Blvd., Suite 300, Broomfield, Colorado 80021 | Tel: 303.410.4000 | Fax: 303.439.2885 | www.mwhglobal.com



MWH's Mobile Project Collaboration (MPC) System



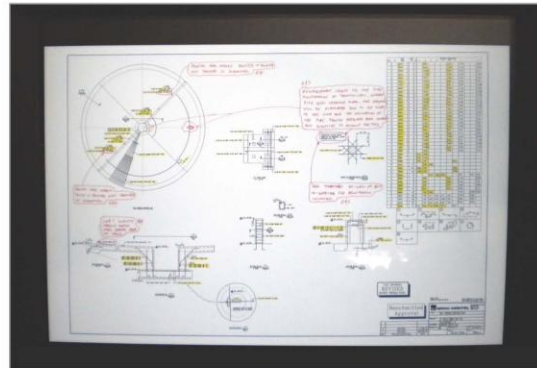
MWH Superintendent Glen Swann and subcontractor personnel reviewing an RFI posted minutes earlier into the MPC System.



MWH Quality Control Inspector Whitney Bremer and the EOR's resident inspector jointly filling out a concrete pre-pour inspection form.



MWH Quality Control Inspector Whitney Bremer entering information into her daily report using the MPC system's tablet, while waiting for a concrete pour to begin.



View of the MPC System tablet and structural shop drawing, demonstrating the ability to annotate red-line as-builts directly on the tablet.



View of the MPC System tablet and project safety audit form being filled out directly on the tablet by MWH's Safety Professional Barry McLaughlin.



View of the MPC System tablet and project progress photograph, demonstrating the ability to manage project photographs using the MPC System.

MWH Constructors, Inc. | 370 Interlocken Blvd., Suite 300, Broomfield, Colorado 80021 | Tel: 303.410.4000 | Fax: 303.439.2885 | www.mwhglobal.com